

State of California
Regional Water Quality Control Board
San Diego Region

EXECUTIVE OFFICER SUMMARY REPORT
June 10, 2004

ITEM: 17

SUBJECT: Status Report: Discussion of Proposal for the San Vicente Groundwater Basin and Non-compliance with Order No. 93-03, Waste Discharge Requirements for the Ramona Municipal Water District, San Vicente Treatment Plant, San Diego County (*Bryan Ott*)

PURPOSE: Provide the Regional Board with status report on proposal by the Ramona Municipal Water District (RMWD) for the San Vicente Wastewater Reclamation Facility (SVWRF).

PUBLIC NOTICE: The June 10, 2004 Regional Board meeting agenda notice that was sent on May 28, 2004 served as the required 10-day official public notification for this action.

DISCUSSION: Notice of Violation (NOV) No. R9-2003-0136 was issued on May 15, 2003 for 32 documented effluent violations of Order No. 93-03 identified in monitoring reports submitted by the RMWD for the SVWRF covering the reporting period from January 2001 through December 2002. Of primary concern were the chronic violations of the total dissolved solids (TDS) limitation. The RMWD was directed to submit a Required Technical Report (RTR) to the Regional Board detailing a plan and schedule of measures that are needed to prevent further effluent violations and a status report on the demineralization facilities at the SVWRF.

On May 30, 2003 the RMWD submitted the RTR to the Regional Board. It included a proposal for the reduction of TDS introduced to the ground waters of the Gower Basin. The proposal decreases the RMWD's reliance on San Diego County Water Authority (SDCWA) water by supplementing a portion of its potable supply water with higher quality water from Lake Sutherland that is treated to drinking water standards by the Bargar Water Treatment Plant. Lake Sutherland water has a

lower TDS concentration than water supplied by the SDCWA (currently an average of 237 mg/L and 525 mg/L, respectively). Information provided by the RMWD predicts that salt loading to the basin caused by imported potable water would be reduced by approximately 588 tons per year by using 1500 AF/yr of Lake Sutherland water in the potable supply.

The proposal was reviewed and rejected by the Regional Board staff for several reasons. An analysis of RMWD's proposal and the reasons for denial are contained in the attached memo staff report dated May 27, 2004.

Regional Board staff does not support the RMWD's request for modification of Order No. 93-03 and rejects the proposal on the basis that it will not result in water quality that meets or is of higher quality than the water quality objectives and beneficial uses established for groundwaters in the Gower HSA. The RMWD's current plan does not proactively treat the groundwater in an effort to restore the water quality to levels established by the Basin Plan, but instead reduces the quantity of salt introduced into the basin from its potable water supply in an attempt to mitigate any further degradation due to salinity. In summary, RMWD failed to properly implement their original plan to protect the groundwater quality in the Gower and Kimball HSA's by not using better quality Lake Sutherland source water and by not demineralizing either the groundwater in the basin or the SVWRF effluent prior to discharge. This has resulted in degradation of the basin water quality, most notably for TDS. RMWD is now proposing to perform only a portion of what was originally planned.

LEGAL CONCERNS:

Regional Board legal counsel has confirmed the Board's inability to enforce discharge specifications on potable water supply discharges to the Basin.

SUPPORTING DOCS:

1. Site Map
2. Staff Report dated May 28, 2004
3. Notice of Violation No. R9-2003-0136 dated May 15, 2003
4. December 24, 2003 Letter
5. RMWD's Salt Reduction Proposal

**SIGNIFICANT
CHANGES:**

Amendment to Order No. 93-03 increasing the annual average TDS effluent concentration produced by the SVWRF from 600 mg/L to 850 mg/L. A TDS concentration limitation of 600 mg/L would be assigned to the commingling of all inputs under control of the RMWD that enter the groundwater.

**COMPLIANCE
RECORD:**

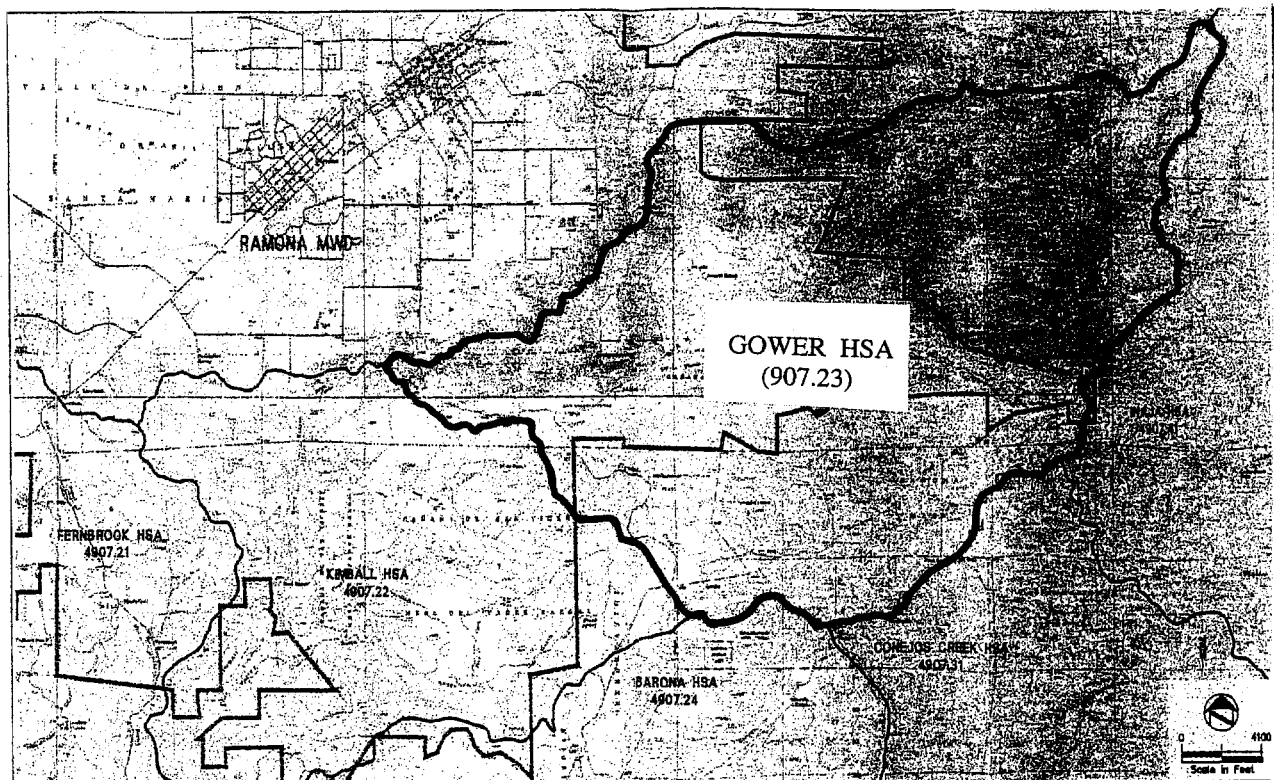
The SVWRF is in chronic violation of its TDS effluent limitation prescribed by Order No. 93-03. Notice of Violation (NOV) No. R9-2003-0136 was issued on May 15, 2003 for 32 documented effluent violations of Order No. 93-03 identified in monitoring reports submitted by the RMWD for the SVWRF covering the reporting period from January 2001 through December 2002.

The RMWD has not operated its RO system since January 1998 as required by Order No. 93-03. The negligence of the RMWD to operate its RO system and the prolonged discharge of recycled water with a TDS concentration in exceedence of the prescribed TDS effluent limitation has contributed to the degradation of the groundwater quality in the Gower Basin.

RECOMMENDATION:

It is recommended that the RMWD's proposal not be supported by the Regional Board.

Item No. 17
Supporting Document No. 1





California Regional Water Quality Control Board

San Diego Region



Terry Tamminen
Secretary for
Environmental
Protection

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Arnold Schwarzenegger
Governor

TO: John H. Robertus
Executive Officer

FROM: Bryan Ott
Water Resource Control Engineer
POTW Compliance Unit

DATE: May 28, 2004

SUBJECT: **RAMONA MUNICIPAL WATER DISTRICT, SAN VICENTE
WASTEWATER TREATMENT FACILITY, STATUS OF COMPLIANCE
WITH WASTE DISCHARGE REQUIREMENTS ORDER NO. 93-03 AND
PROPOSED SALT REDUCTION PLAN**

Introduction

The purpose of this staff report is to provide information to the Regional Board regarding the reasons for denial of Ramona Municipal Water District's (RMWD) recent proposal for salt reduction in the Gower Hydrologic Sub-Area (HSA) and discuss the RMWD's non-compliance of Regional Board Order No. 93-03, which has contributed to exceedances of water quality objectives for groundwater in the basin.

The RMWD owns and operates the San Vicente Wastewater Reclamation Facility (SVWRF) located on San Vicente Road in the Gower Hydrologic Sub-Area (HSA). The SVWRF serves the San Diego Country Estates development also located in the Gower HSA. Effluent from the SVWRF is regulated under Regional Board Order No. 93-03, *Waste Discharge Requirements for the Ramona Municipal Water District, San Vicente Treatment Plant, San Diego County*, which contains a 30-day average maximum flow rate discharge specification of 0.75 MGD. The 30-day average effluent flow rate for the year 2003 was 0.63 million gallons per day (MGD). At build-out capacity, the SVWRF is expected to have an average maximum flow rate of 0.80 MGD.

Effluent from the SVWRF is disposed of via spray field disposal to lands adjacent to the plant and irrigation purposes at the Spangler Peak Ranch (formerly known as Solk Ranch) and the San Vicente Golf Course, all areas located within the Gower HSA. The total dissolved solids 12-month average discharge specification contained in Order No. 93-03 is 600 mg/L, which is based on the Basin Plan total dissolved solids (TDS) objective for the protection of ground water quality of the San Vicente Hydrologic Area. The SVWRF 2003 average TDS effluent concentration was 817 mg/L. The effluent produced by the SVWRF is not currently demineralized to reduce TDS concentrations to meet the Basin Plan objective.

At the Regional Board Meeting of September 13, 2000, the Regional Board considered and subsequently denied adoption of a tentative resolution that would have relaxed ground water quality objectives, notably total dissolved solids (TDS), to the level of water quality that the RMWD predicted in the year 2008 for the Gower and Kimball HSA's of the San Vicente Hydrologic Area (HA). At that time, some members of the Regional Board expressed concerns that the proposed resolution would not be protective of groundwater quality and could facilitate further degradation of existing water quality in these basins.

As established in the Water Quality Control Plan for the San Diego Basin (9) (Basin Plan), the designated beneficial uses for the Gower (907.23) and Kimball (907.22) HSA's of the San Vicente (907.20) HA of the San Diego (907.00) Hydrologic Unit include municipal, domestic, and agricultural supply.

The Gower HSA is situated in the upper portion of the San Vicente Hydrologic Area (HA) and has the potential to impact the lower portion of the basin, namely the Kimball HSA and the Fernbrook HSA. San Vicente Reservoir, a large drinking water reservoir owned by the City of San Diego, is located in the Fernbrook HSA approximately five miles downstream of the San Diego Country Estates development. Also, private water supply wells exist in the San Vicente HA. To protect the beneficial uses, the Basin Plan objectives for TDS and other constituents were established in the San Vicente HA and subsequently implemented in the waste discharge requirements for the discharge of reclaimed wastewater from the SVWRF.

Current ground water TDS concentrations in the San Vicente HA, as measured at several locations within the basin, exceed the Basin Plan objective of 600 mg/L. The RMWD's technical reports provided to the Regional Board show that the 1998 TDS concentration of ground water in the Gower and Kimball HSA's range from 641 mg/L to 860 mg/L, whereas in 1988, the spectrum of TDS levels varied from 357 mg/L to 595 mg/L. The RMWD reports that the current average TDS concentration of ground water taken from wells in the Gower Basin (basin) is 769 mg/L, with a maximum sample result of 1,010 mg/L. It should be noted that both state and federal secondary drinking water standards for TDS range from 500 mg/L to 1,000 mg/L.

Degradation of the basin has resulted from several factors: 1) increased importation of high TDS quality water for potable use, 2) land application of effluent from the SVWRF containing high concentrations of TDS, 3) potential septage leaking from local septic tanks blending with the ground water, and 4) agricultural land uses that concentrate salts in the soil. The accumulation of these factors over the years has yielded deleterious effects on the basin, culminating in the current predicament. The relative effect of each of these potential factors on groundwater quality is not known. The effects from factors 3 and 4, however, are considered to be minor compared to the effects from factors 1 and 2, those actions by the RMWD.

The remainder of this staff report discusses how the RMWD has contributed to the degradation of the groundwater quality in the Gower and Kimball HSAs over the past years (factors 1 and 2 above) and

offers certain options available to the Regional Board to correct and mitigate the current water quality problem.

Background and Discussion

The changes in the blend of potable water supplied by the RMWD and its quality can be traced back to the initial San Vicente development and through the issuance of Regional Board Orders beginning in the year 1971. Finding No. 12 of Order No. 71-64, adopted by the Regional Board on December 13, 1971, describes the RMWD project proposal indicating that the major source of potable supply water for the development in the basin would be from the Lake Sutherland Reservoir with the balance supplied by the San Diego County Water Authority (SDCWA). The importance of using Lake Sutherland water is emphasized in Finding No. 13, which states, "The use of Sutherland Reservoir water for the major portion of the domestic supply of the proposed development is essential if the ground water objectives of the [Basin] Plan are to be met." Finding Nos. 14 and 15 describe RMWD's proposed additional measures to maintain the quality of groundwater in the basin, which includes the construction of a well in the vicinity of San Vicente Creek to be operated in conjunction with a desalination facility to extract groundwater downstream of the proposed irrigation area and remove a portion of the dissolved minerals for disposal elsewhere. At that time, the Department of Water Resources and the City of San Diego expressed doubts as to the effectiveness of the proposed wastewater treatment and groundwater extraction/demineralization program and requested strict adherence to the groundwater quality objectives.

Finding No. 22 of Order No. 79-17, adopted by the Regional Board on February 26, 1979 as an update of Order No. 71-64, states the major supply of potable water *is* from the Lake Sutherland Reservoir. However, Finding No. 6.c of Addendum No. 2 to Order No. 79-19, adopted on March 11, 1982, states that potable water supplied by the RMWD is a combination of ground water from wells from outside the San Vicente HA, imported water from the SDCWA, and water from the Lake Sutherland Reservoir. The TDS concentration of the three water supplies is described in the Finding as follows: the RMWD's potable water supply wells ranged from 528 mg/L to 950 mg/L between the years 1978 and 1980, SDCWA water contains approximately 550 mg/L, and water from the Lake Sutherland Reservoir has historically had an average of 200 mg/L. Finding No. 6.d notes that it is anticipated that water supplied from the SDCWA would eventually be the primary source of potable water delivered by the RMWD to its users. This significant change of the primary potable water source is reportedly because of physical and contractual limits on the ability to obtain well water and Lake Sutherland water. By 1981, the RMWD's potable water consisted of approximately 70 percent water supplied by the SDCWA. Currently all of the potable water used at the San Vicente development is imported water supplied by the SDCWA.

RMWD currently imports approximately 3,000 acre-feet per year (AF/yr) of water from the SDCWA for potable use in the Gower HSA, which, from 1996 to 2002, had an average TDS concentration of approximately 525 mg/L. The imported SDCWA potable water contributes to the basin approximately 2,135 tons of salt per year. Using the SVWRF 2003 average TDS

effluent concentration of 817 mg/L (RMWD has not demineralized the SVWRF effluent since January 1998), another 783 tons of salt per year is added to the basin by the application of recycled water via irrigation purposes and spray field disposal.

The accrual of salinity in the groundwater of the Gower HSA is the consequence of anthropogenic activities within the basin, including the deliberate actions by RMWD to exclusively use imported high-TDS water as source water and their choice not to demineralize effluent from the SVWRF to meet prescribed effluent limitations. In anticipation of the known effects to the ground water incurred by urbanizing the basin, and in an attempt to protect the beneficial uses of the basin by preventing the build up salts in the ground water, the RMWD originally chose to demineralize the effluent from the SVWRF by using a reverse osmosis (RO) system in lieu of the groundwater extraction/demineralization program mentioned above. Since 1974, the effluent limitations established in the waste discharge requirements for the SVWRF necessitated that the RMWD use an RO process to reduce salt concentrations in excess of ground water limitations prescribed by their waste discharge requirements. Use of this RO system, however, was discontinued in January of 1998. Thus, RMWD has accelerated the increase of TDS in the ground water by deciding to change their potable source water from Lake Sutherland water to SDCWA water and to forego demineralization of the effluent from the SVWRF, which results in violations of discharge specifications contained in Order No. 93-03.

Addendum No. 2 to Order No. 86-72, adopted in 1991, states in Finding No. 5: "A portion of the plant flow will be demineralized [by Reverse Osmosis] and blended with the remaining portion in such a manner that the final effluent concentrations of TDS, chloride, and sulfate do not exceed the 12-month running average found in the potable water supplies distributed by the Ramona Municipal Water District for use in the San Diego County Estates Development." Similar language is found in Finding No. 9 of Order No. 86-72, and also in Finding No. 4 of Addendum No. 4 to Order No. 71-64 (adopted in the year 1977), but states that the final blended effluent is to have a TDS concentration of 200 mg/L. The change in the TDS limit from 200 mg/L to the 12-month running average found in the potable water supply is found in Order No. WQ 81-16, which was adopted by the State Water Resources Control Board on December 17, 1981. Addendum No. 2 to Order No. 93-03, adopted in the year 1995, established the daily maximum limitation of TDS in the SVWRF's effluent to be 650 mg/L and the 12-month average to be 600 mg/L to coincide with the Basin Plan objectives. Currently, the SVWRF does not demineralize any portion of its effluent, nor have RMWD used Lake Sutherland water, thus producing a final effluent with a TDS concentration of over 800 mg/L. As previously mentioned, RMWD has reported that the RO system has not been operated since January of 1998 and the non-operation has resulted in its disrepair.

History of Non-compliance

As described above, RMWD has decided to forego the use of Lake Sutherland water with low mineral constituent concentrations and has chosen not to operate the onsite RO unit to demineralize the effluent from the SVWRF. These decisions have resulted in numerous effluent

violations of Order No. 93-03 over the past several years. Most recently, Notice of Violation (NOV) No. R9-2003-0136 was issued on May 15, 2003 for 32 documented effluent violations of Order No. 93-03 identified in monitoring reports submitted by the RMWD for the SVWRF covering the reporting period from January 2001 through December 2002. Of primary concern were chronic violations of TDS and boron. Violations for turbidity, total coliform, and pH were also listed. The RMWD was directed to submit a Required Technical Report (RTR) to the Regional Board detailing a plan and schedule of measures that are being, or will be, taken to prevent further effluent violations and a status report on the demineralization facilities at the SVWRF. On May 30, 2003 the RMWD submitted the RTR to the Regional Board. It included a proposal for the reduction of TDS introduced to the ground waters of the Gower HSA by using a potable source water with a lower TDS concentration than what is currently used. Prior to implementation, the proposal would require modification of the existing waste discharge requirements, as contained in Order No. 93-03, to increase the effluent TDS discharge specification for the SVWRF. The proposal was rejected by staff for the reasons detailed above and as discussed further in the following section.

RMWD's Salt Reduction Plan

A ground water model performed in the year 2000 by Dudek and Associates, a consultant for the RMWD, predicts that the basin is degrading primarily because of the regional importation of supply water containing significant levels of minerals (TDS) and less from the contribution of the recycled water from the SVWRF.

On May 30, 2003, the RMWD submitted to the Regional Board a proposal for the reduction of TDS introduced to the ground waters of only the Gower Basin. It should be noted that previous submittals by the RMWD regarding the degraded ground water quality in the San Vicente HA, which the Regional Board subsequently denied, had involved both the Kimball and Gower HSA's. The new proposal would decrease RMWD's reliance on SDCWA water by supplementing a portion of its potable supply water with higher quality water from Lake Sutherland. As mentioned previously, Lake Sutherland water has a lower TDS concentration than water supplied by the SDCWA (a current average of 237 mg/L and 525 mg/L, respectively). Information provided by RMWD predicts that salt loading to the basin caused by imported potable water would be reduced by approximately 588 tons per year by using a minimum of 1,500 AF/yr of Lake Sutherland water in the potable supply.

The ground water of the basin currently exceeds the Basin Plan's ground water quality objective for TDS of 600 mg/L by almost 200 mg/L on average. RMWD recognizes the fact that both the ground water of the basin and the effluent produced by the SVWRF exceed the TDS ground water quality objective established by the Basin Plan. RMWD proposes to initiate measures aimed at maintaining the current TDS concentration of the ground water in the basin. The RMWD contends that an approximate 200 mg/L increase in the TDS concentration of the ground water in the basin above the water quality objective should be acceptable to the Regional Board. RMWD argues that, unlike previous requests, this initiative does not require a Basin Plan

Amendment to the San Vicente HA, but would instead require an amendment to Order No. 93-03, which regulates the discharge from the SVWRF. The RMWD is requesting that the Regional Board modify Order No. 93-03 to allow the SVWRF to discharge effluent at an annual average TDS concentration of 850 mg/L (250 mg/L above its current limit of 600 mg/L), thus allowing potentially upwards of 304 more tons of salt per year to be added to the basin than is currently allowed by the Order. In essence, the RMWD is asking the Regional Board to allow the SVWRF to maintain its existing operations and produce a non-demineralized effluent with a TDS concentration that presently averages 817 mg/L. The RMWD would offset the increase in effluent concentration by bringing in source water from Lake Sutherland that has a lower TDS concentration for use at the San Vicente development. The RMWD states that the money spent on operating an RO unit for the effluent would be better spent by purchasing and treating water from Lake Sutherland for use as potable water, thereby reducing the tons of salt applied to the Gower HSA.

As also proposed by the RMWD, the Basin Plan's ground water quality objective of 600 mg/L for TDS would no longer be applied solely to the effluent from the SVWRF. The RMWD proposed that objective be applied to all of the water discharged to the basin under the control of the RMWD, i.e., source water and effluent from the SVWRF. The RMWD has supplied calculations demonstrating that by diluting the potable supply water from SDCWA with at least 1,000 AF/yr of higher quality water from Lake Sutherland, the blending of inputs to the basin would result in a TDS concentration of approximately 600 mg/L. However, the actual TDS concentration of the ground water in the basin would still exceed the water quality objective of the Basin Plan. The RMWD contends that this salt reduction plan would introduce less salt to the ground water of the basin compared to demineralization via RO of the SVWRF's effluent.

The Regional Board has rejected this proposal because the Basin Plan objectives for ground water have not been and will not be achieved. The proposal would still result in groundwater mineral concentrations exceeding the Basin Plan objectives. As mentioned above, the San Vicente development was approved with groundwater protection mitigation measures including 1) the use of low mineral concentration source water from Lake Sutherland and local groundwater and 2) demineralization of the groundwater and/or the effluent from the SVWRF to maintain the mineral concentrations at the Basin Plan objectives. The RMWD has chosen not to perform either of these preventative measures, thus their lack of action has contributed greatly to the degradation of the groundwater basin. The RMWD's current proposal is simply to conduct a fraction of mitigation measure number 1 described above, i.e., to use a portion (approximately 50%) of the source water from Lake Sutherland thereby reducing the amount of salts added to the basin. Neither the effluent from the SVWRF nor the groundwater would be treated to remove TDS constituents (minerals). The proposal would do nothing to restore the quality of the groundwater in the basin to meet Basin Plan objectives. Furthermore, Regional Board legal counsel has confirmed the Board's inability to enforce discharge specifications on potable water supply discharges to the Basin.

Conclusion

While the RMWD's current proposal would result in a reduction of salts added to the Gower HSA, it falls far short of the reductions necessary to protect the groundwater and to restore the water quality to levels established by the Basin Plan.

After subsequent meetings with the RMWD, review of supplemental information, and careful evaluation of the proposal, the RMWD was notified by letter on December 24, 2003 that staff would not support their latest proposal and request to modify the waste discharge requirements of Order No. 93-03. The decision is based on the following conclusions:

1. The initial San Vicente project development was approved under the premise that mitigation measures to protect groundwater in the Gower HSA would be implemented. These measures included using Lake Sutherland reservoir water as the major source of municipal supply water for the development as well as demineralization of groundwater and/or effluent from the SVWRF.
2. Over the past years, the RMWD has consciously decided to move away from using lower TDS Lake Sutherland source water and use entirely imported SDCWA water in contrast to the original plan for the San Diego Country Estates development. This decision by the RMWD has contributed to the degradation of ground water quality in the Gower HSA.
3. The RMWD has not been operating its effluent RO system as required to meet the discharge specification of Order No. 93-03 nor has it been demineralizing the groundwater in the Gower HAS as originally proposed. The negligence of the RMWD to operate its RO system and the prolonged discharge of recycled water with a TDS concentration in exceedance of the prescribed TDS effluent limitation has also contributed to the degradation of the groundwater quality in the Gower Basin.
4. The proposal submitted by the RMWD does not directly address any resolution for the high TDS concentration in the recycled water produced by the SVWRF under its current effluent limitations.
5. The RMWD's proposal requires that the TDS effluent limitation prescribed by Order No. 93-03 be applied to the groundwater of the Gower basin and not solely restricted to the effluent produced by the SVWRF. The plan would allow the SVWRF to operate with no demineralization of its effluent, and to produce recycled water with a TDS concentration higher than the groundwater quality objective contained in the Basin Plan for the Gower Basin. Data supplied by the RMWD illustrates an expected trend of steadily increasing TDS concentration in the groundwater of the Gower Basin. With no demineralization of the SVWRF's effluent, the rate of degradation of the ground waters will be accelerated and exacerbated by the contribution of recycled water supplied by the SVWRF for application to the landscape for irrigation purposes. This is in direct contrast the to the

Regional Board's goal of preserving the beneficial uses of the groundwater in the Gower Basin.

The Regional Board staff concludes that the increased salinity in the ground water of the basin is primarily the result of urbanization, which greatly increased the demand for potable water to meet the new and expanding population. The prolonged use of potable water from the SDCWA and the disposal of non-demineralized effluent produced by the SVWRF via irrigation purposes and spray field disposal has consequently degraded the water quality of the Gower basin.

If the water quality of the ground water is to be restored, the TDS inputs to the basin must be significantly decreased and/or the ground water itself must be treated. Any comprehensive plan to restore the salinity of the basin to its previous condition will require a larger and more intensive effort than currently proposed by the RMWD.

The Regional Board may consider the following options:

1. Require compliance with the current discharge specifications contained in Order No. 93-03 by taking formal enforcement action against the RMWD for failure to comply. This type of action could include a time schedule order, cease and desist order (with or without a time schedule), cleanup and abatement order, imposition of administrative civil liability, referral to the district attorney, referral to the attorney general, or some combination of these enforcement actions. RMWD may have several options for achieving compliance with the existing discharge specifications including use of lower TDS Lake Sutherland water as source water, demineralization of SDCWA source water, demineralization of the SVWRF effluent, etc.
2. Require the RMWD to develop and implement a more comprehensive and aggressive strategy to restore the groundwater quality of the basin. In addition to the actions in Item No. 1 above, RMWD would be required to restore the groundwater basin in the Gower HSA to meet the groundwater quality objectives specified in the Basin Plan. The restoration requirements could be incorporated into the enforcement action(s) as mentioned in Item No. 1 above or could be included in a separate enforcement action(s).
3. Amend the Basin Plan to relax the ground water quality objectives in the Gower HSA of the San Vicente HA. RMWD has presented this option to the Regional Board members in the past, most recently on September 13, 2000, and adoption was subsequently denied.

Note that options 1 and 2 are not mutually exclusive. The Regional Board could choose to enact Option 1 now and come back at a later time to begin implementation of Option 2.



California Regional Water Quality Control Board

San Diego Region

Winston H. Hickox
Secretary for
Environmental
Protection

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Phone (858) 467-2952 • FAX (858) 571-6972



Gray Davis
Governor

CERTIFIED-RETURN RECEIPT REQUESTED
7002 1000 0004 6879 0431

May 15, 2003

Mr. Thomas L. Brammell
General Manager
Ramona Municipal Water District
105 Earlham Street
Ramona, CA 92065-1599

In Reply Refer To:
01-0076.02

Dear Mr. Brammell:

RE: NOTICE OF VIOLATION NO. R9-2003-0136 & REQUIRED TECHNICAL REPORT

FACILITY: SAN VICENTE WASTEWATER TREATMENT PLANT

Enclosed is **Notice of Violation (NOV) No. R9-2003-0136** regarding chronic effluent violations for the San Vicente Wastewater Treatment Plant (SVWTP).

Pursuant to California Water Code (CWC) Section 13267, the San Diego Regional Water Quality Control Board (Regional Board) directs you to submit a **Required Technical Report (RTR)** to the Regional Board no later than **5:00 PM, June 17, 2003**. This information is required to fully assess what steps are being taken by the Ramona Municipal Water District (RMWD) to mitigate and prevent the impacts of recycled water to local ground water and to evaluate the need for further enforcement action by the Regional Board. The RTR shall include the following items:

- 1) A detailed plan and schedule outlining how the Ramona Municipal Water District will implement measures to prevent further effluent violations of Order No. 93-03. While the RMWD has submitted a request to relax the water quality objectives for TDS in certain groundwater basins, until the Regional Board has amended their Basin Plan and modified the discharge specifications in Order No. 93-03, the effluent limitations for TDS in Order No. 93-03 remain in effect.
- 2) A status report on all demineralization facilities (such as reverse osmosis units) at the SVWTP. The report shall include, but not necessarily be limited to, a list of all facilities, current working conditions of the facilities, dates and times the demineralization equipment have been in operation since January 2001, and current and future proposed operating schedule.

California Environmental Protection Agency

The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs, see our Web-site at <http://www.swrcb.ca.gov>.

May 15, 2003

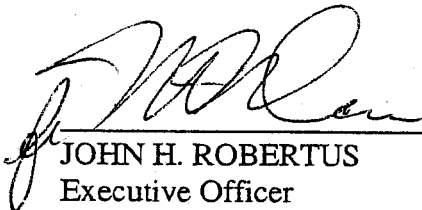
The submitted RTR shall include the following signed certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Failure to submit the above information by the date requested may result in the imposition of administrative civil liability pursuant to CWC section 13268.

Questions pertaining to this Required Technical Report and the enclosed Notice of Violation should be directed to Mr. Bryan Ott at (858) 637-5589. Written correspondence should be directed to the following address:

John H. Robertus
Executive Officer
Attn: Bryan Ott
California Regional Water Quality Control Board
San Diego Region
9174 Sky Park Court, Suite 100
San Diego, CA 92123-4340



JOHN H. ROBERTUS
Executive Officer

5/15/03

DATE

cc/enclosure: John Pastore, Dudek and Associates, 605 Third Street, Encinitas, CA 92024

Richard Carlson, County Department of Environmental Health, 5201 Ruffin Road, Suite C, San Diego, CA 92123

File No: 01-0076.02

V: 72172-72174; 93025; 93026; 93033; 93034; 93036; 96992-96995; 96998-97000; 97002; 116491-116495; 127295; 127297-127299; 127315; 127316; 133628-133630; 133634; 133635

E: (LTR) 71425

California Environmental Protection Agency

The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs, see our Web-site at <http://www.swrcb.ca.gov>.



California Regional Water Quality Control Board

San Diego Region



Winston H. Hickox
Secretary for
Environmental
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Gray Davis
Governor

May 15, 2003

IN THE MATTER OF)

Mr. Thomas L. Brammell)
General Manager)
Ramona Municipal Water District)
105 Earlham Street)
Ramona, CA 92065-1599)

NOTICE OF VIOLATION
NOV R9-2003-0136

FACILITY: SAN VICENTE WASTEWATER TREATMENT PLANT

RE: JANUARY 2001 - DECEMBER 2002 MONITORING REPORTS FOR ORDER
NO. 93-03

YOU ARE HEREBY NOTIFIED THAT:

The Regional Board has documented 32 effluent violations of Order No. 93-03 identified in monitoring reports submitted by the Ramona Municipal Water District for the San Vicente Wastewater Treatment Plant (SVWTP) covering the reporting period from January 2001 through December 2002 (see attached Table 1). Of particular concern are the chronic effluent violations for total dissolved solids (TDS), boron, and turbidity.

The chronic TDS and boron violations are of primary concern to the Regional Board since discharge effluent specifications for these specific constituents were established based on the protection of ground water quality in the Gower (907.23) and Kimball (907.22) Hydrologic Subareas (HSA) of the San Vicente (907.20) Hydrologic Area of the San Diego (907.00) Hydrologic Unit.

The Regional Board has also received a complaint of high TDS concentration in the reclaimed water produced by the SVWTP.

These effluent violations constitute violations of waste discharge specifications contained in Order No. 93-03 and the Water Quality Control Plan for the San Diego Basin (Basin Plan).

Please take steps to correct the above noted violations of Order No. 93-03. Pursuant to the California Water Code (CWC), the violations noted above are subject to additional enforcement action(s) by the Regional Board including time schedule orders, cease and desist orders, cleanup and abatement orders, administrative civil liability, referral to the district attorney or referral to the attorney general. Administrative civil liability amounts imposed by the Regional Board

California Environmental Protection Agency

The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs, see our Web-site at <http://www.swrcb.ca.gov>.

Mr. Thomas L. Brammell

-2-

May 15, 2003

under CWC Section 13350 could be from \$100 to \$5,000 per day per violation, or up to \$10 per gallon for each gallon of waste discharged.

Questions pertaining to the issuance of this **Notice of Violation** should be directed to Mr. Bryan Ott at (858) 637-5589. Written correspondence pertaining to this **Notice of Violation** should be directed to the following address:

Michael P. McCann
Supervising Water Resource Control Engineer
Attn: Bryan Ott
California Regional Water Quality Control Board
San Diego Region
9174 Sky Park Court, Suite 100
San Diego, CA 92123-4340



MICHAEL P. McCANN
Supervising Water Resource Control Engineer

5/15/03
DATE

cc: John Pastore, Dudek and Associates, 605 Third Street, Encinitas, CA 92024

Richard Carlson, County Department of Environmental Health, 5201 Ruffin Road, Suite C, San Diego, CA 92123

File No: 01-0076.02

V: 72172-72174; 93025; 93026; 93033; 93034; 93036; 96992-96995; 96998-97000; 97002; 116491-116495; 127295; 127297-127299; 127315; 127316; 133628-133630; 133634; 133635

E: (NOV) 71429

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The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs, see our Web-site at <http://www.swrcb.ca.gov>.

Table 1: Effluent Violations of San Vicente Wastewater Treatment Plant Order No. 93-03 from January 2001 through December 2002

Violation Number	Date Occurred	Constituent	Type of Limit	Limit (Units)	Reported Value
1	2/28/01	Total Dissolved Solids	Daily	650 mg/L	713 mg/L
2	2/28/01	Total Dissolved Solids	12-month Average	600 mg/L	713 mg/L
3	2/28/01	Boron	Daily	0.6 mg/L	0.69 mg/L
4	5/30/01	Coliform	Daily	240 MPN/100 mL*	1600 MPN/100 mL*
5	6/13/01	Total Dissolved Solids	Daily	650 mg/L	692 mg/L
6	6/13/01	Boron	Daily	0.6 mg/L	0.76 mg/L
7	9/5/01	Total Dissolved Solids	Daily	650 mg/L	750 mg/L
8	9/5/01	Boron	Daily	0.6 mg/L	0.84 mg/L
9	10/26/01	Turbidity	Daily	5 NTU	6.5 NTU
10	10/27/01	Turbidity	Daily	5 NTU	5.5 NTU
11	12/12/01	Total Dissolved Solids	Daily	650 mg/L	756 mg/L
12	12/15/01	Turbidity	Daily	5 NTU	5.5 NTU
13	12/26/01	Turbidity	Daily	5 NTU	5.5 NTU
14	12/26/01	pH	Minimum At Any Time	6 pH units	5.9 pH units
15	12/28/01	Turbidity	Daily	5 NTU	5.5 NTU
16	12/31/01	Total Dissolved Solids	12-month Average	600 mg/L	728 mg/L
17	4/17/02	Total Dissolved Solids	Daily	650 mg/L	842 mg/L
18	4/17/02	Total Dissolved Solids	12-month Average	600 mg/L	760 mg/L
19	5/13/02	Turbidity	Daily	5 NTU	5.2 NTU
20	5/14/02	Turbidity	Daily	5 NTU	6.7 NTU
21	5/15/02	Turbidity	Daily	5 NTU	5.5 NTU
22	7/31/02	Total Dissolved Solids	Daily	650 mg/L	915 mg/L
23	8/7/02	Coliform	Daily	240 MPN/100 mL*	900 MPN/100 mL*
24	8/12/02	Coliform	Daily	240 MPN/100 mL*	1600 MPN/100 mL*
25	8/25/02	Turbidity	Daily	5 NTU	5.5 NTU
26	9/18/02	Total Dissolved Solids	12-month Average	600 mg/L	836 mg/L
27	9/18/02	Total Dissolved Solids	Daily	650 mg/L	894 mg/L
28	11/13/02	Boron	Daily	0.6 mg/L	0.62 mg/L
29	11/17/02	Turbidity	Daily	5 NTU	5.3 NTU
30	12/18/02	Total Dissolved Solids	Daily	650 mg/L	894 mg/L
31	12/31/02	Total Dissolved Solids	12-month Average	600 mg/L	849 mg/L
32	12/31/02	Boron	12-month Average	0.5 mg/L	0.58 mg/L

* The number of total coliform bacteria shall not exceed an MPN of 240 per 100 mL in more than one sample in any 30 day period.



California Regional Water Quality Control Board

San Diego Region



Terry Tamminen
Secretary for
Environmental
Protection

9174 Sky Park Court, Suite 100, San Diego, California 92123-4340
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Arnold Schwarzenegger
Governor

*The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption.
For a list of simple ways you can reduce demand and cut your energy costs, visit our website.*

CERTIFIED MAIL – Return Reply Requested
7003 1680 0000 7393 5837

December 24, 2003

Mr. Thomas L. Brammell
General Manager
Ramona Municipal Water District
105 Earlham Street
Ramona, CA 92065-1599

In Reply Refer To:
POTW:01-0076.02:OTBRY

Dear Mr. Brammell:

FACILITY: SAN VICENTE WASTEWATER RECLAMATION PLANT

**RE: REQUEST FOR REVISION TO WASTE DISCHARGE REQUIREMENTS FOR
ORDER NO. 93-03 FOR THE SAN VICENTE WASTEWATER RECLAMATION
PLANT**

On May 30, 2003 the Ramona Municipal Water District (RMWD) submitted to the San Diego Regional Water Quality Control Board (Regional Board) a proposal for the reduction of total dissolved solids (TDS) introduced to the groundwaters of the Gower Basin. After subsequent meetings with the RMWD, review of supplemental information, and careful evaluation of the proposal, the Regional Board does not support the RMWD's proposal and request to modify the waste discharge requirements of Order No. 93-03.

Notice of Violation (NOV) No. R9-2003-0136 was issued on May 15, 2003 for 32 documented effluent violations of Order No. 93-03 identified in monitoring reports submitted by the RMWD for the San Vicente Wastewater Reclamation Plant (SVWRP) covering the reporting period from January 2001 through December 2002. The RMWD was directed to submit a Required Technical Report (RTR) to the Regional Board detailing a plan and schedule of measures that are or will be taken to prevent further effluent violations and a status report on the demineralization facilities at the SVWRP. On May 30, 2003 the RMWD submitted the RTR to the Regional Board. It included a proposal for the reduction of TDS introduced to the groundwaters of the Gower (907.23) Hydrologic Subarea of the San Vicente (907.20) Hydrologic Area of the San Diego (907.00) Hydrologic Unit by using a potable source water with a lower TDS concentration than what is currently available. This proposal would require an increase in the TDS concentration limit for treated effluent from the SVWRP as contained in Order No. 93-03.

California Environmental Protection Agency

The Regional Board does not support the RMWD's request for modification of Order No. 93-03 and rejects the proposal on the basis that it will not result in water quality that meets or exceeds the water quality objectives and beneficial uses established for groundwaters in the Gower HSA. The decision is based on the following conclusions:

- 1) The RMWD has not been operating its reverse osmosis (RO) system for some time as required by Order No. 93-03. The negligence of the RMWD to operate its RO system and the prolonged discharge of recycled water with a TDS concentration in exceedence of the prescribed TDS effluent limitation has contributed to the degradation of the groundwater quality in the Gower Basin;
- 2) The proposal submitted by the RMWD does not directly address, nor recommend, any resolution for the high TDS concentration in the recycled water produced by the SVWRP, which is a direct and chronic violation of the waste discharge requirements issued by the Regional Board and the Water Quality Control Plan for the San Diego Basin (Basin Plan); and,
- 3) The RMWD's proposal requires that the TDS effluent limitation prescribed by Order No. 93-03 be applied to the groundwater of the Gower basin and not solely restricted to the effluent produced by the SVWRP. The plan would allow the SVWRP to operate with no demineralization of its effluent, and to produce recycled water with a TDS concentration higher than the groundwater quality objective contained in the Basin Plan for the Gower Basin. Data supplied by the RMWD illustrates an expected trend of steadily increasing TDS concentration in the groundwater of the Gower Basin. With no demineralization of the SVWRP's effluent, the rate of degradation of the groundwaters will be accelerated and exacerbated by the contribution of recycled water supplied by the SVWRP for application to the landscape for irrigation purposes. This is in direct contrast the to the Regional Board's goal of preserving the beneficial uses of the groundwater in the Gower Basin.

Pursuant to California Water Code (CWC) Section 13267, the Regional Board directs you to submit a **Required Technical Report (RTR)** to the Regional Board no later than **5:00 PM, February 6, 2004**. This information is required to fully assess what steps are being taken by the RMWD to mitigate and prevent the impacts of recycled water to local groundwater and to evaluate the need for further enforcement action by the Regional Board. The RTR shall address the following item:

- 1) A detailed plan and schedule outlining how the Ramona Municipal Water District will implement measures to achieve compliance with all discharge specifications of Order No. 93-03. The plan shall include a final date for achieving full compliance, as well as interim dates for such as awarding contracts, procuring equipment, initiation of construction, etc.

The submitted RTR shall include the following signed certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Failure to submit the above information by the date requested may result in the imposition of administrative civil liability pursuant to CWC section 13268.

Questions pertaining to this Required Technical Report should be directed to Mr. Bryan Ott at (858) 637-5589. Written correspondence should be directed to the following address:

John H. Robertus
Executive Officer
Attn: Bryan Ott
California Regional Water Quality Control Board
San Diego Region
9174 Sky Park Court, Suite 100
San Diego, CA 92123-4340

The heading portion of this letter includes a Regional Board code number noted after "In reply refer to:" In order to assist us in the processing of your correspondence, please include this code number in the heading or subject line portion of all correspondence and reports to the Regional Board pertaining to this matter.

Respectfully,

JOHN H. ROBERTUS
Executive Officer

JHR:mpm:bdk:bao

Mr. Thomas L. Brammell

- 4 -

December 24, 2003

cc: John Pastore, Dudek and Associates, 605 Third Street, Encinitas, CA 92024

Richard Carlson, County Department of Environmental Health, 5201 Ruffin Road, Suite C, San Diego, CA 92123

California Environmental Protection Agency

**REPORT
ON
REVISION TO WASTE DISCHARGE REQUIREMENTS
FOR
SAN VICENTE WATER RECLAMATION PLANT**

January 30, 2004

**Ramona Municipal Water District
105 Earlham Street
Ramona, CA 92065-1599**

TABLE OF CONTENTS

1	EXECUTIVE SUMMARY	1
1.1	Executive Summary	1
2	GOWER HYDROLOGIC SUBAREA	4
2.1	Water Sources	4
2.2	Groundwater Conditions	5
2.3	RMWD Imported Water	7
2.4	Recycled Water	8
3	SALT REDUCTION PLAN	9
3.1	Salt Reduction Plan Overview	9
3.2	TDS of Source Waters	10
3.3	Salt Reduction Methodology	10
3.4	Availability of Low Salinity Local Water	12
3.5	Lake Sutherland Reliability	13
3.6	Agreement for Use of Lake Sutherland Water	14
4	COST AND BENEFITS.....	15
4.1	Cost of RO	15
4.2	Cost of Salt Reduction Plan	15
4.3	Pros and Cons of Alternatives	15
5	CONCLUSIONS AND RECOMMENDATIONS.....	16
5.1	Conclusions and Recommendations	16

1.1 Executive Summary

The Ramona Municipal Water District (RMWD, District) is requesting a revision to the Waste Discharge Requirements (Order No. 93-03) for the San Vicente Wastewater Reclamation Plant (SVWRP). This is a continuation of the District's requested for relief from the Waste Discharge Requirements (WDR) of 600mg/l total dissolved solids (TDS). The RMWD is requesting that the WDR be revised to permit the TDS level of the effluent from the SVWRP to be increased to 850mg/l and the RMWD mitigate this increase by changing the imported water to a low TDS Bargar water to reduce the salt load entering the Gower Groundwater Basin.

A Basin Plan Amendment was prepared in 1999 requesting an increase in TDS to 950ppm and the RWQCB staff recommended the Basin Plan Amendment to the RWQCB Directors at its September 13, 1999 Meeting. This recommendation was supported by studies that demonstrated that the ground water TDS was increasing due to urbanization with or without the 600mg/l TDS restriction on SVWRP. This study demonstrated the ground water TDS would approach 1000ppm with or without processing the San Vicente WRP effluent through the RO process. The Water Quality Control Plan for the San Diego Basin (9) confirms this study by stating on page 1-12 that "When this water is used for urban needs the TDS increases by about 300 mg/l to 900-1050 mg/l."

The RWQCB Directors voted to not approve the Basin Plan Amendment while directing RWQCB staff to return to a future Board meeting for reconsideration based on answers to three questions. The questions were: 1) why increase to 950ppm if a lower number would do, 2) clarify percentage of the Districts effluent that contributes to the basin TDS, and 3) clarify the request for increased nitrates.

In June 2002 the District approached the RWQCB staff and learned that they would not support a Basin Plan Amendment again. The District proceeded to evaluate other options and developed the Salt Reduction Plan presented in this report. **The Salt Reduction Plan does not require a Basin Plan Amendment and provides mitigation for increasing the permitted TDS of the effluent from San Vicente Wastewater Reclamation Plant to 850ppm.** In June 2003 the District submitted the original request for revision to the Waste Discharge Requirements permit (Order No. 93-03) for the San Vicente Wastewater Reclamation Plant (SVWRP). This report updates the original report by incorporating input and responses to RWQCB Staff questions.

The District has determined through modeling and physical system changes that the RMWD water system can deliver 1500AFY of low (237ppm) TDS Bargar WTP water to the San Diego Country Estates (SDCE) area overlying the Gower Basin. The historical average annual quantity of low TDS water available to Bargar WTP is 2500AFY. The imported TDS of County Water Authority water was determined to average 525ppm over a ten-year period and Bargar water averaged 237ppm.

Using the historical ten-year annual averages for TDS, the ultimate plant capacity of 800,000gpd, and annual treated volume of 896AFY as an example the follow benefit would accrue in the basin in an average year:

Tons of Salt	Source
1962	2,750af @ 525 TDS, CWA drinking water
730	624af @ 600 TDS, effluent after RO blend
2693	Total RO alternative
892	1,250af @ 525 TDS, CWA drinking water
483	1,500af @ 237 TDS, Bargar drinking water
384	408af @ 850 TDS, effluent with CWA input
460	488af @ 562 TDS, effluent with Bargar input
2219	Total Bargar alternative without RO
474	Bargar alternative less than RO alternative

Thus reducing the salt load entering the Gower basin versus a reverse osmosis (RO) system with County Water Authority water being used in the basin.

The District is committed to assure that in no four-year rolling average period shall the tons of salt introduced into the basin be greater than the tons that would have occurred under the RO alternative. The RMWD proposal for the importing low TDS water into the Gower Basin is the best approach for meeting the Gower Basin Plan and is best for the overall environment for the following reasons:

1. Reduction of 474 tons of salt versus the RO alternative.
2. Conserves electric energy.
3. Conserves fossil fuel used to haul brine off site.
4. Reduces air pollution by elimination of hauling of brine
5. Reduces truck traffic.
6. Reduces flow of brine to Metropolitan Wastewater District

Other benefits include:

1. RMWD continuing to operate the Bargar WTP and thus create the opportunity to provide low TDS water into other basins in the Ramona Area.
2. Savings to sewer customers of approximately \$700,000 capital expenditure.
3. Eliminating the need for additional annual costs of approximately \$500,000 that would require a sewer service rate increase of approximately 50%.

Since the salt reduction plan is not the typical method of addressing the TDS of effluent from a wastewater reclamation plant it will require a unique method to assure compliance. The RMWD is proposing to monitor the TDS of SVWRP effluent, CWA imported water and Barger WTP water on a quarterly basis and report annually the reduction in salt compared to the use of 100% CWA water. The RMWD would keep a rolling average over a four-year period of the reduction in tons of salt.

The Salt Reduction Plan detailed herein mitigates the increased TDS and on average results in a lower level of salt introduced into the Gower Basin than the RO system. This request has the support of the City of San Diego Water Utilities Department and the principal user of recycled water Mr. Matt Witman.

Based on the benefits to the Gower Basin and the overall benefit to the environment and the cost savings to the community it is requested that the Waste Discharge Requirements (WDR) for the San Vicente Water Reclamation Plant be revised to allow an effluent TDS of 850ppm and the importation of a four year rolling average of 1500afy of Bargar Water.

Section 2

Gower Hydrologic Subarea

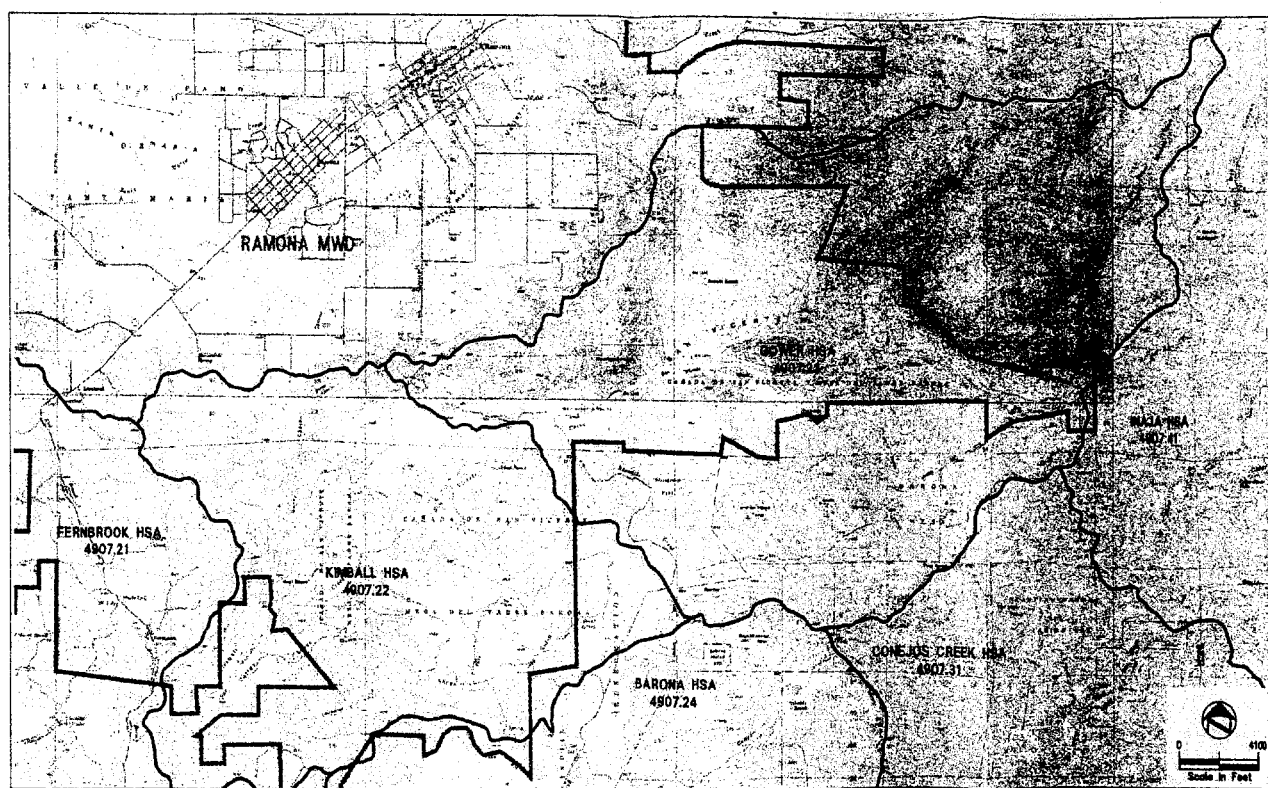
2.1 Water Sources

The SVWRP is located in the Gower Hydrologic Subarea (HSA), Figure 2-1, a ground water basin within the San Vicente Hydrologic Area (HA), that has municipal and agricultural beneficial uses.

The water sources to the Gower Basin consist of private wells (there are no RMWD wells), RMWD imported water and RMWD recycled water from the SVWRP. No matter which source of water is used the TDS of the water introduced to the groundwater basin in an urban setting typically increases by 300mg/l. The Water Quality Control Plan for the San Diego Basin (9) states on page 1-12 that "When this water is used for urban needs the TDS increases by about 300 mg/l to 900-1050 mg/l."

The average TDS of the water from wells in the Gower Basin is 769mg/l, the average TDS of RMWD imported water (SDCWA supply) is 525mg/l, and the average TDS for SVWRP recycled water is 600mg/l.

Figure 2-1



Ramona Municipal Water District Groundwater Basin Study
Gower Hydrologic Subarea (HSA 7.23) and the Ramona MWD Boundaries

FIGURE
2-1

2.2 Groundwater Conditions

The groundwater underlying areas north of the San Vicente Golf Course that do not use reclaimed water and are up gradient of the plant have experienced TDS increases of 260mg/l and more from 1988 to 1998 reaching TDS levels as high as 860mg/l. Recent data presented in Figure 2-2, obtained from the wells in Figure 2-3, illustrates that the TDS levels are continuing or increase to as high as 1010mg/l as the studies noted below predicted the groundwater water TDS would approach 1000ppm with or without processing the San Vicente WRP effluent through the RO process.

Figure 2-2

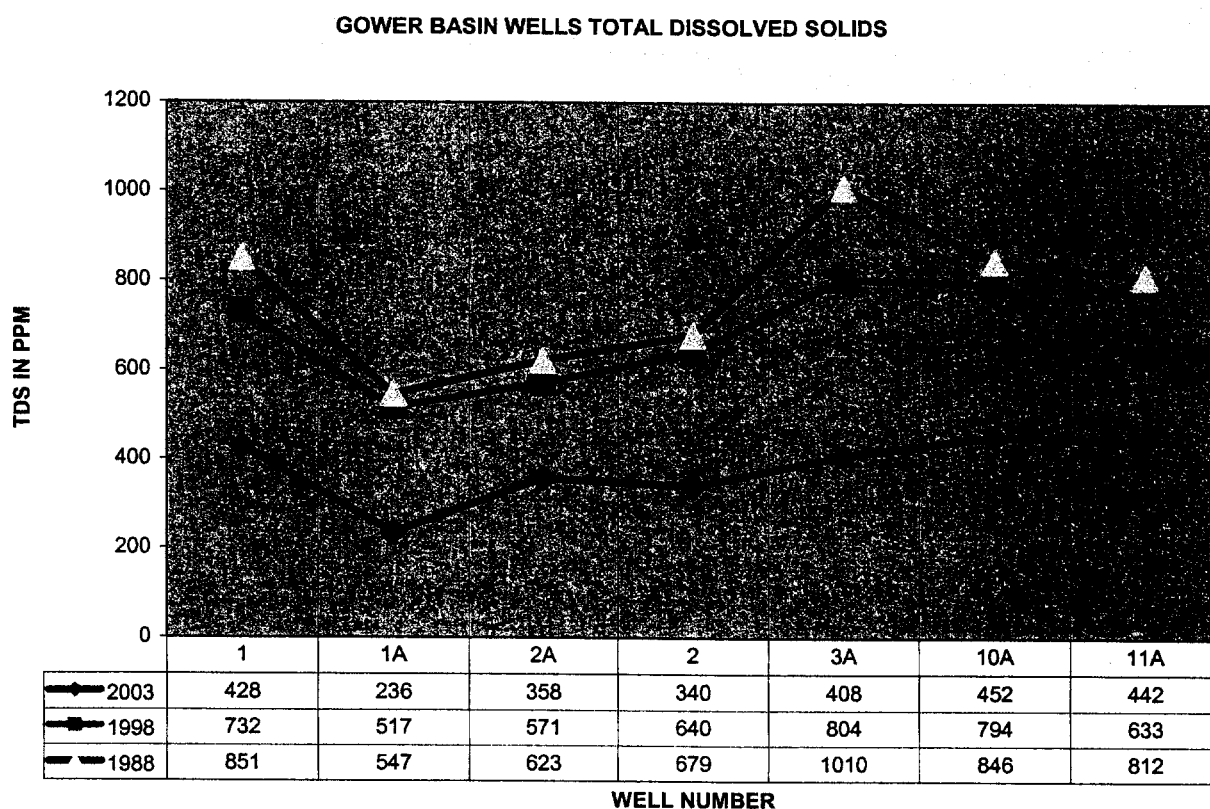
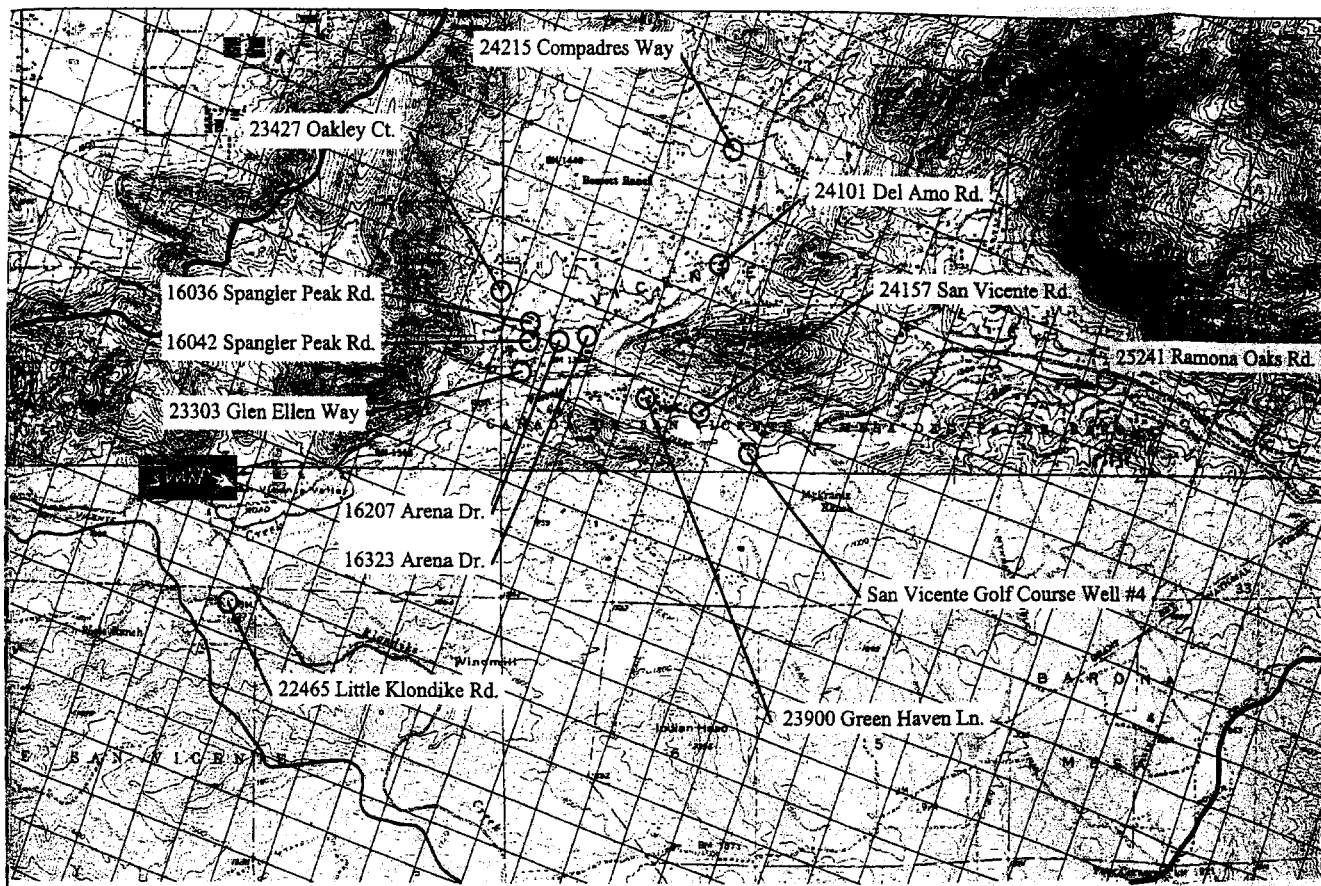


Figure 2-3



15

Groundwater salinity is impacted by various activities such as repeated use of groundwater supplies, application of fertilizers and pesticides, introduction of household detergents and other constituents through home septic systems, landscape irrigation, and the salinity of imported water supply. Data shows that the salinity of a typical domestic water supply increases by about 300 mg/L as it travels from its source through to ultimate disposal. Groundwater salinity within the boundaries of the District has increased over the past few decades as the result of this domestic urbanization.

The reports and studies listed below illustrate the impacts to the groundwater of this increased urbanization. The information in these studies led to the District's development of this proposed salt reduction plan.

Groundwater TDS Study, April 1999

The major conclusions contained in the report are as follows:

- Due to continued urbanization of the area and use of imported water, groundwater salinity will continue to increase irrespective of the San Vicente WRP effluent limitations;
- Operation of the reverse osmosis system at the San Vicente WRP will have little affect on the groundwater TDS concentrations, but will incur a tremendous cost to the ratepayers;
- The existing groundwater TDS already exceeds the San Vicente waste discharge permit limits

Groundwater Basin Report and Modeling for TDS Concentrations, June 2000

Dudek & Associates prepared a June 2000 report titled "*Investigation of Potential Increases in the Total Dissolved Solids in Groundwater in the Gower and Kimball Hydrologic Sub-Areas Near Ramona, California.*" Under this study, a computer model was developed for the Gower and Kimball Hydrologic Sub-Areas and used to evaluate predicted groundwater salinity over a 10-year period. The conclusions of that study were as follows:

- Groundwater salinity concentrations increased between 1988 and 1998, as predicted by earlier studies, due primarily to urbanization and factors beyond the control of the district;
- Groundwater salinity concentrations are projected to continue to increase over the next 10 years as a result of continued urbanization of the basin, irrigation with local groundwater, use of septic systems, and other factors beyond the control of the District.

If well water is used in the basin the water introduced to the groundwater would be typically be 1069mg/l which is close to the 1010mg/l being experienced in one of the wells already.

2.3 RMWD Imported Water

The RMWD imported water from the SDCWA originates at the Metropolitan Water District's Lake Skinner Plant located in Riverside County, and is comprised of a blend of both Colorado River and State Project Water. The actual salinity of SDCWA water is a function of the blending proportion, and that blend varies throughout the year. Table 2-1, below, is a summary of annual average salinity concentrations for SDCWA source water for the period 1996 to 2002. Over this period, the average salinity concentration of SDCWA source water has been approximately 525 mg/L. If SDCWA water is used in the basin the water introduced to the groundwater would be typically be 825mg/l

TABLE 2-1
Salinity of SDCWA Water

	1996	1997	1998	1999	2000	2001	2002	Average
Ann. Avg.	579	586	521	502	467	500	516	525

The District ^{has} completed new facilities to allow all current and future treated water demands to be provided by the SDCWA. Construction of these facilities was ~~been~~ determined to be the most cost effective approach for providing reliable potable water to the Ramona area. These improvements allow the abandonment of the Bargar plant.

However, the District is proposing to invest in Bargar if the Salt Reduction Plan is approved. By using the Bargar source of RMWD imported water. Lake Sutherland is the source of the low TDS water processed through the Barger Filtration Plant. As shown in Table 2-2, Lake Sutherland water TDS has varied between 160 and 280 mg/L, with an average salinity concentration of approximately 237 mg/L over the last 10 years. It is noted that variation in Lake Sutherland salinity is primarily a result of variations in seasonal precipitation (i.e. wet years vs. dry years) and lake evaporation. If Bargar water is used in the basin the water introduced to the groundwater would typically be 537mg/l

TABLE 2-2
Salinity of Treated Water from Lake Sutherland

Year	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	Average
TDS	160	200	270	210	230	240	240	260	280	280	237

2.4 Recycled Water

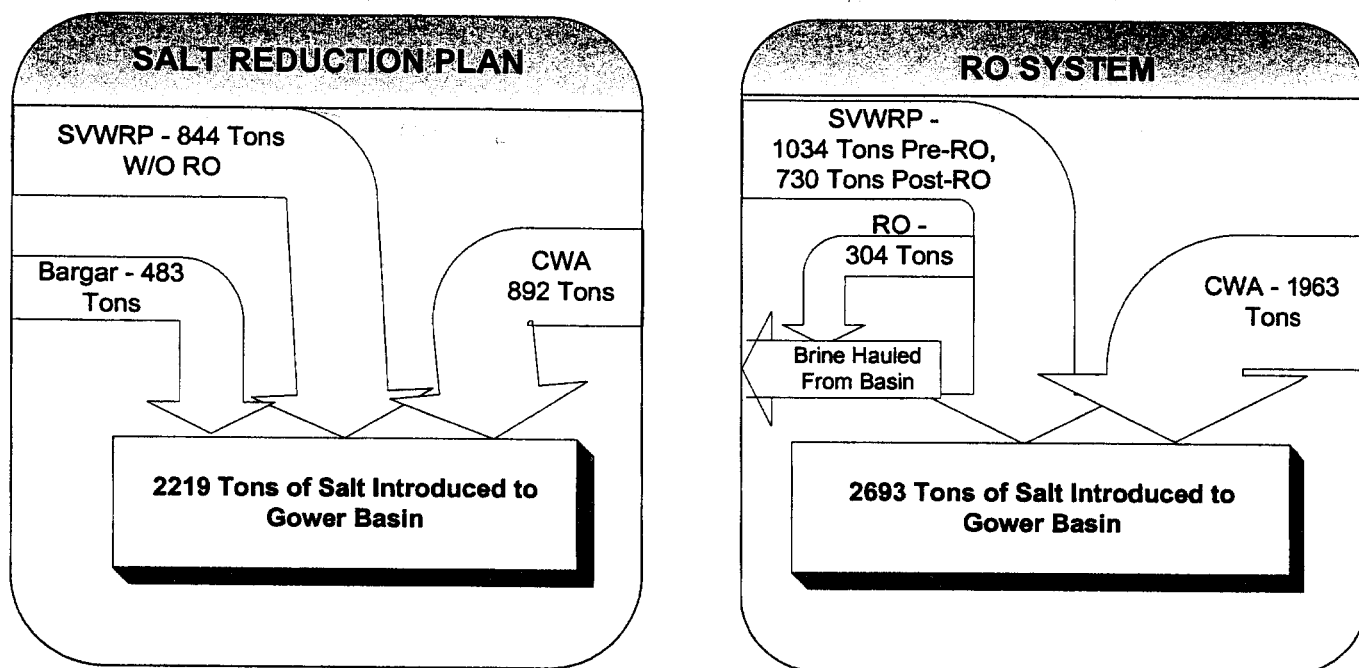
The RMWD operates the SVWRP under Waste Discharge Requirements (WDR) issued by the Regional Water Quality Control Board (RWQCB) that limit the TDS for the SVWRP effluent to 600 mg/l. If SVWRP water is used in the basin the water introduced to the groundwater would typically be 900mg/l.

Comparing the sources of water and their impacts on the groundwater, the use of well introduces in 1069 mg/l, SDCWA water introduces 825 mg/l, Bargar water introduces 537 mg/l and recycled water introduces 900 mg/l.

3.1 Salt Reduction Plan Overview

Previous studies and observations show that the groundwater basin TDS has and will continue to increase based on factors that are independent of the TDS of the effluent from the San Vicente WRP. Therefore approving an increase in the SVWRP effluent to 850 mg/l will not degrade the basin. However, to mitigate the up to 304 tons of salt that the San Vicente WRP would contribute to the basin by not utilizing the reverse osmosis process, the District proposes a Salt Reduction Plan. The Salt Reduction Plan will reduce the tons of salt introduced into the basin by 474 tons per year compared to the RO system. The plan consists of replacing SDCWA water with lower salinity water from Lake Sutherland processed through the Bargar Water Filtration Plant. The following section provides the basis for the salt loading and balance calculations, lists the salinity of various source waters, and provides the amount of Lake Sutherland water necessary to meet the objectives of the District's TDS reduction plan. Figure 3-1 illustrates the salt load for the RO system and the Salt Reduction Plan. The Salt Reduction plan reducing the salt load by an average of 474 tons per year.

Figure 3-1



- Reduces salts introduced to basin by 474 tons compared to RO System
- Based on CWA TDS of 525ppm, Bargar TDS of 237ppm
- Based on demand in SDCE of 2750AFY (1250AFY CWA, 1500AFY Bargar)

Ultimate System Comparison at 800,000gpd (896AFY)

3.2 TDS of Source Waters

The major source of salinity impact to groundwater is the TDS resulting from urbanization of the area that adds approximately 300mg/l to the TDS of any source water. As outlined in the previous discussions, urbanization, and domestic water use is the source of increased TDS of the influent received at the San Vicente WRP. However, the salinity of the source water entering the homes and irrigation systems establishes the starting point for these increases. By starting with source water lower in TDS, the overall salinity of the resultant water can be lowered

Table 3-1, below, is a summary of annual average salinity concentrations for SDCWA source water for the period 1996 to 2002. Over this period, the average salinity concentration of SDCWA source water has been approximately 525 mg/L.

TABLE 3-1
Salinity of SDCWA Water

	1996	1997	1998	1999	2000	2001	2002	Average
Ann. Avg.	579	586	521	502	467	500	516	525

By comparison, as shown in Table 2-2, Lake Sutherland water has varied between 160 and 280 mg/L, with an average salinity concentration of approximately 237 mg/L over the last 10 years. It is noted that variation in Lake Sutherland salinity is primarily a result of variations in seasonal precipitation (i.e. wet years vs. dry years) and lake evaporation.

TABLE 3-2
Salinity of Treated Water from Lake Sutherland

Year	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	Average
TDS	160	200	270	210	230	240	240	260	280	280	237

Based on the information contained in Tables 3-1 and 3-2, each acre-foot of water that the District uses from Lake Sutherland results in a direct reduction of the total salinity loading within the basin. Based on historical data, each acre-foot of water used from Lake Sutherland would average 288 mg/L lower in TDS than if the water were imported from SDCWA.

3.3 Salt Reduction Methodology

The District's proposed salt reduction plan calls for revising the current Waste Discharge Requirements limit on TDS for the San Vicente WRP from its current value of 600 mg/L to 850 mg/L. This revision will be more than offset on a gallon per gallon basis though the use of Lake Sutherland water, which results in a reduction in salinity concentration of the water supply by approximately 288 mg/L. This would result in a net average reduction in salinity concentration of approximately 30 to 40 mg/L on a gallon for gallon basis. As part of the salt reduction plan, it is proposed that a salinity balance within the District's boundaries will be computed annually using a four-year running average of salinity concentrations.

Based on the proposed salt reduction plan, the difference in salinity loading from the San Vicente plant at its ultimate capacity of 800,000 gpd with a revised salinity limit of 850 mg/L would be approximately 304 tons, calculated as follows:

$$(365 \text{ days} \times 0.8 \text{ mgd} \times 8.34 \text{ lbs/MG-mg/l} \times 250 \text{ mg/l}) / 2000 \text{ lbs/ton} = \underline{\underline{304 \text{ tons}}}$$

This calculation over estimates the tons of salt because the plant does not run at 800,000gpd 365 day a year. Also, if lower TDS source water is introduced into the basin the SVWRP effluent TDS decreases.

The average decrease in salinity of 288 mg/L achieved through the use of Lake Sutherland source water will reduce the total salinity loading to the District's boundary by 0.39 tons per acre-foot, computed as follows:

$$(1 \text{ AF} / 3.069 \text{ AF/MG}) \times 8.34 \text{ lbs/MG-mg/l} \times 288 \text{ mg/l} / 2000 \text{ lbs/ton} = \underline{\underline{0.39 \text{ tons/AF}}}$$

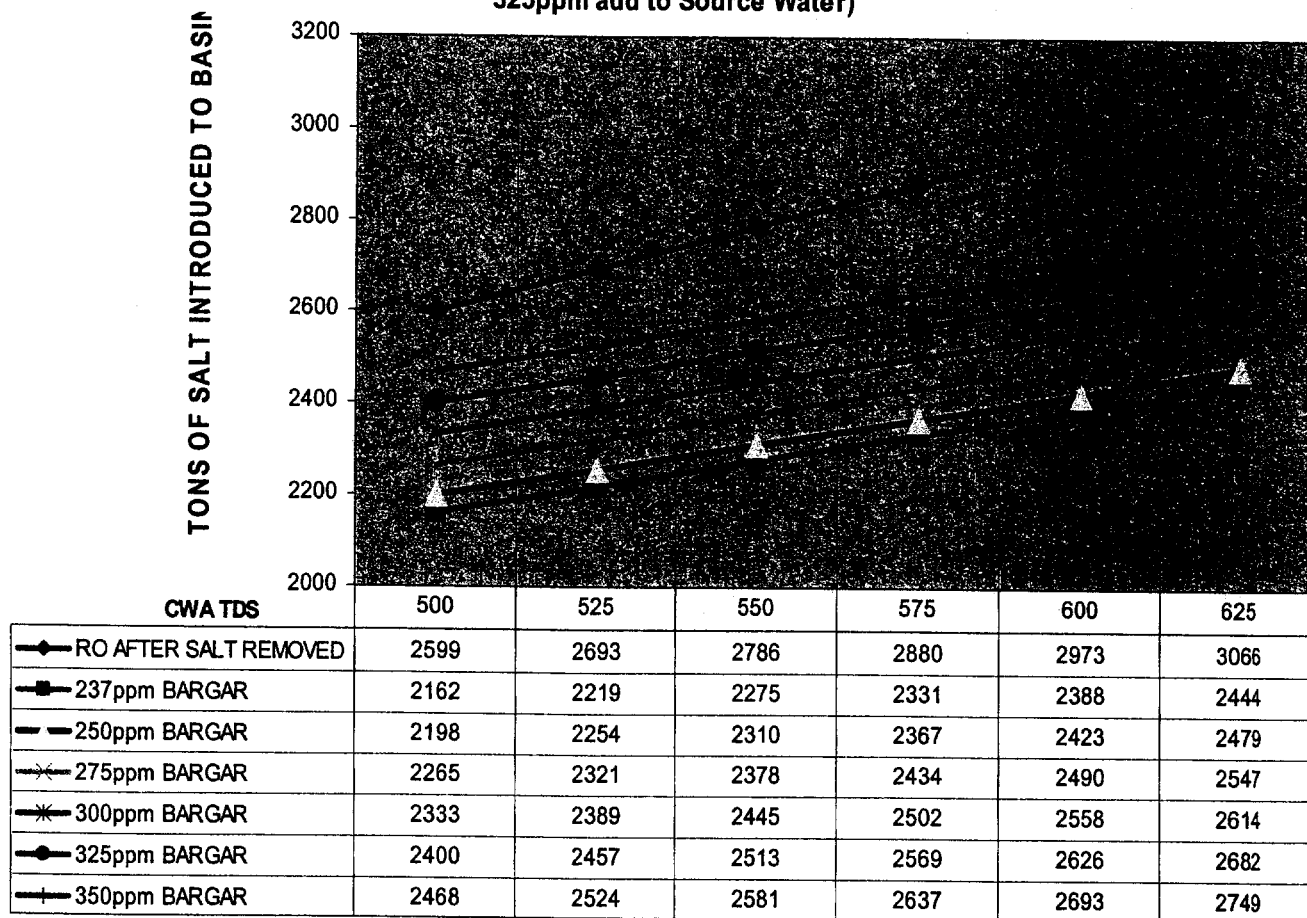
Therefore, based on the total annual average salinity loading resulting from the revision to the San Vicente WRP effluent limit, the District would need to treat and distribute a minimum of 780 acre-feet of Lake Sutherland water to balance the 304 tons of salt introduced into the groundwater basin by the San Vicente plant discharge, calculated as follows:

$$304 \text{ tons} / 0.39 \text{ tons/AF} = \underline{\underline{780 \text{ acre-feet}}}$$

This calculation over estimates the need AFY (acre feet per year) because of the conservative nature of the 304 tons as stated above.

The Figure 3-2 illustrates the relationship between the TDS of the SDCWA water, Bargar Water TDS, RO System and the tons of salt introduced into the basin. Even with very high TDS from Bargar, that have not been experienced the Salt Reduction Plan reduces salt loading more than the RO system. In the best case over 622 tons more tons of salt would not be introduced into the basin compared to RO.

TONS OF SALT INTRODUCED INTO BASIN AT BUILD OUT 800,000GPD
 (Based on 1500afy of Bargar Source water and RO based on 100% CWA Source water,
 325ppm add to Source Water)



The District proposes to introduce 1500AFY of Bargar low TDS water into the SDCEs that will reduce the salt load by 474 tons per year compared to the RO system. Refer to Figure 3-1.

3.4 Availability of Low Salinity Local Water Supply

The District has a contract with the City of San Diego for 2,500 acre-feet of Lake Sutherland water annually, with a potential to increase that supply upon request. The Bargar WTP has the ability to produce over 4,000 acre-feet of treated water annually. However, Bargar WTP is currently not in compliance with the most recently promulgated drinking water regulations, and will require significant investment to remain in service. As part of this TDS reduction plan, the District will invest in the needed improvements to the Bargar WTP for meeting drinking water regulations so as to increase the availability of low salinity water throughout the Gower Basin.

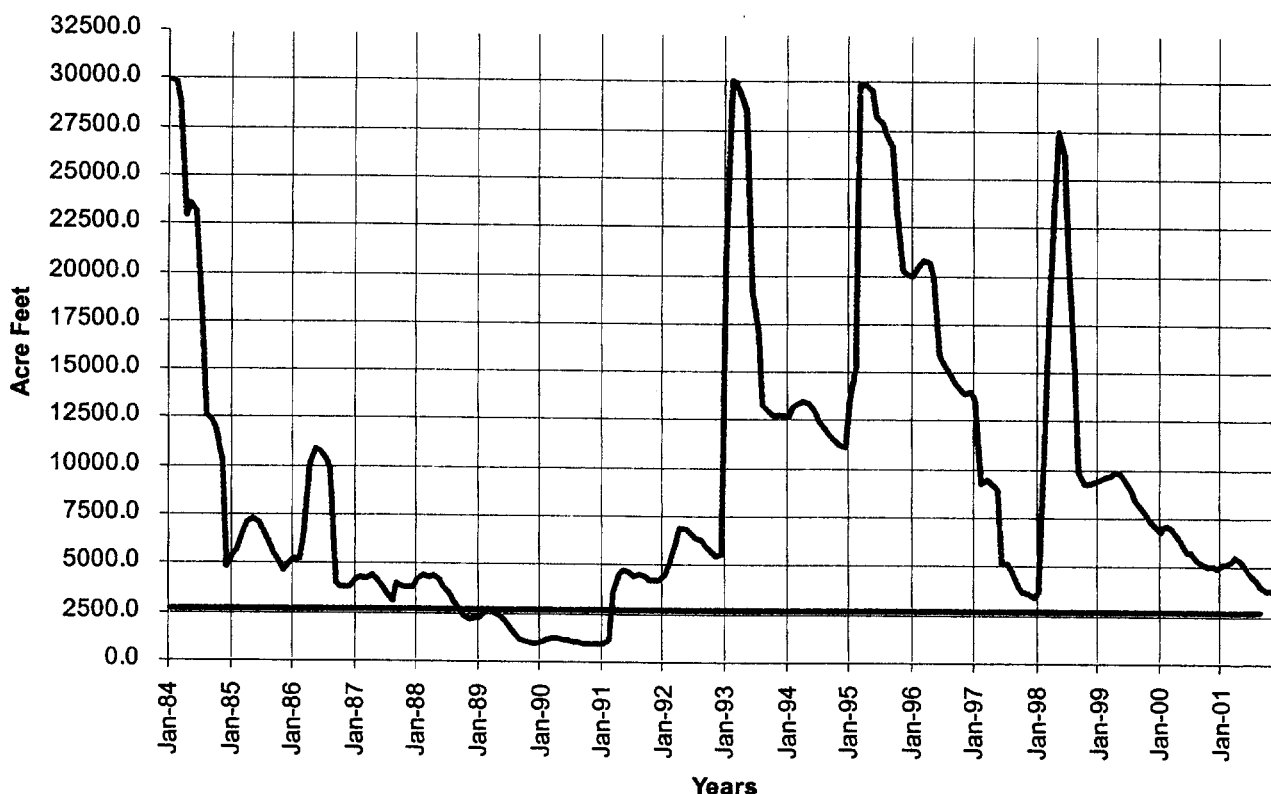
3.5 Lake Sutherland Reliability

Lake Sutherland is an existing surface water impoundment owned and operated by the City of San Diego. The lake results from the backwaters of Sutherland Dam, a structure constructed in 1954. At its highest water level, Lake Sutherland forms a surface area of approximately 550 acres, and has a total capacity of approximately 30,000 acre-feet.

Lake Sutherland is tributary to the District's potable water distribution system through the Bargar WTP. Source water from Lake Sutherland is conveyed to the Bargar WTP through a City of San Diego 36-inch pipeline with a turnout at the Bargar plant. The average storage in Lake Sutherland since 1984 has been over 8,900 acre-feet annually, and on occasion the lake has spilled. Figure 3-2 illustrate the acre-feet in storage over between 1984 and 2001.

Figure 3-2

Lake Sutherland Storage History



3.6 Agreement for Use of Lake Sutherland Water

The District and the City of San Diego established the original agreement in 1953. The following is a summary of the pertinent features of the agreement, as it is currently:

- The District is entitled to annual use of 2,500 acre-feet of Lake Sutherland water, provided that all water is taken from above the Gauge 65 reservoir level. However, the City has allowed drawdown below Gauge 65 on occasion;
- The District may increase the amount of water used above the 2,500 acre-feet restriction upon request to and approval by the City of San Diego; and
- The District pays the City of San Diego for Lake Sutherland water at a rate equal to the current SDCWA raw water rate. Additionally, the District pays its fair share of the operational and maintenance costs incurred by the City of San Diego for operation of the reservoir.

In summary there is a reliable low TDS water supply from Lake Sutherland that will average approximately 2500 AFY, the Bargar WTP has a capacity of 4000 AFY and there is a long term agreement in place with the City of San Diego. The proposed Salt Reduction Plan is an improvement over the current WDR conditions.

4.1 Cost of RO

The cost impacts of upgrading the existing RO system to meet current WDR of 600mg/l are significant. The capital cost for initial installation is \$700,000 and this does not account for future replacement costs. The operating and maintenance cost of electricity, filter replacement and hauling and disposal of brine is estimated at \$500,000 a year. This cost will require a 50% plus increase in sewer service charges for existing customers.

4.2 Cost of Salt Reduction Plan

The capital cost impact of upgrading Bargar to treat low TDS water is approximately \$850,000. The operating costs will vary depending on the amount of water treated. Assuming 1500AFY are treated the cost of the Bargar water will be close to the cost of purchasing water from SDCWA. However, when considering the capital expense it will cost more to produce Bargar water than CWA water by approximately \$130,000 per year. The costs are potentially spread over a larger customer base and so the rate effects may be minimal.

4.3 Pros and Cons of Alternatives

The benefits of the Salt Reduction Plan seem to be significantly more than the RO alternative. Compare to the RO the Salt Reduction Plan:

- 1) Improves the basin by introducing 474 tons less salt.
- 2) Conserves electricity
- 3) Reduces truck traffic
- 4) Conserve fossil fuels
- 5) Reduces air pollution
- 6) Eliminates sending flows to Metro
- 7) Avoids a major sewer service charge rate increase

The only negative is that the approach is not common and will require flexibility and creativity in monitoring. It will need to utilize a rolling four-year average since sometimes less Bargar water is available and on other times there is extra water available.

Clearly the Salt Reduction Plan is a superior approach to addressing the SVWRP effluent TDS.

5.1 Conclusions and Recommendations

This report demonstrates the feasibility and benefits of adopting the Salt Reduction Plan proposed by the District as follows:

- 1) Increasing the allowable TDS of the SVWRP effluent to 850mg/l has less effect on the groundwater basin than the use of groundwater.
- 2) The plan calls for mitigation that reduces the salt load into the basin by an average of 474 ton per year compared to the current 600mg/l limitation that requires RO.
- 3) Capital cost to RO is \$700,000
- 4) Operating cost to RO is \$500,000
- 5) First phase of upgrade of Bargar is \$700,000
- 6) City of San Diego supports the Salt Reduction Plan Concept
- 7) Principal recycled water user supports concept
- 8) San Diego Country Estates Golf Course Supports concept
- 9) Conserves electricity, fossil fuels, and reduces air pollution

Based on the analyses performed RMWD is respectfully requesting the following:

1. That the San Vicente WRP Waste Discharge Requirements (WDR) be revised from its current annual average TDS limit of 600 mg/L to 850 mg/L.
2. That the San Vicente WRP Waste Discharge Requirements permit be revised to require the District to treat and distribute to SDCEs a four-year rolling average annual volume of 1,500 acre-feet of Bargar water.
3. Monitor the TDS of SVWRP effluent, CWA imported water and Barger WTP water on a quarterly basis and report annually the reduction in salt compared to the use of 100% CWA water. Keep a rolling average over a four-year period of the reduction in tons of salt.
4. In no four-year rolling average period shall the tons of salt introduced into the basin be greater than the tons that would have occurred under the RO alternative.



RAMONA MUNICIPAL WATER DISTRICT

105 EARLHAM STREET
RAMONA, CA 92065-1599

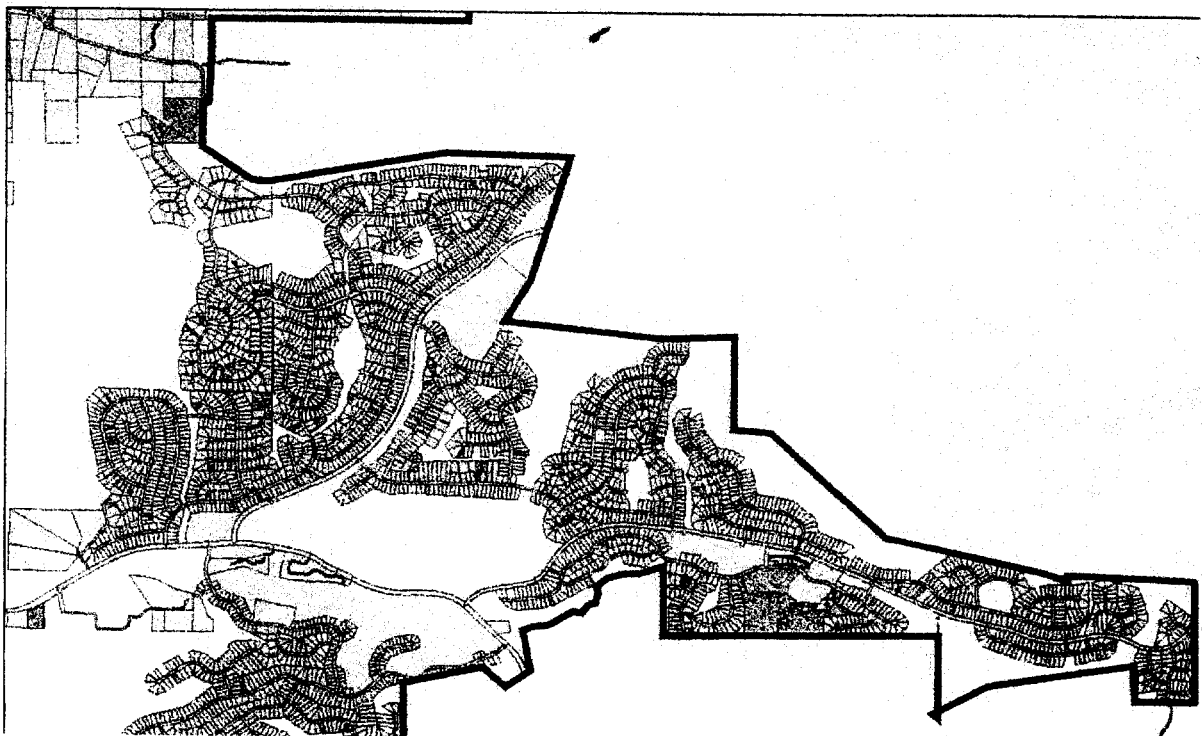
TELEPHONE: 760-789-1330
FACSIMILE: 760-788-2202
www.rmwd.org

Mitigation Alternative Versus TDS Limitation in Addressing Groundwater Impacts of Wastewater Discharge From Recycled Water Facilities

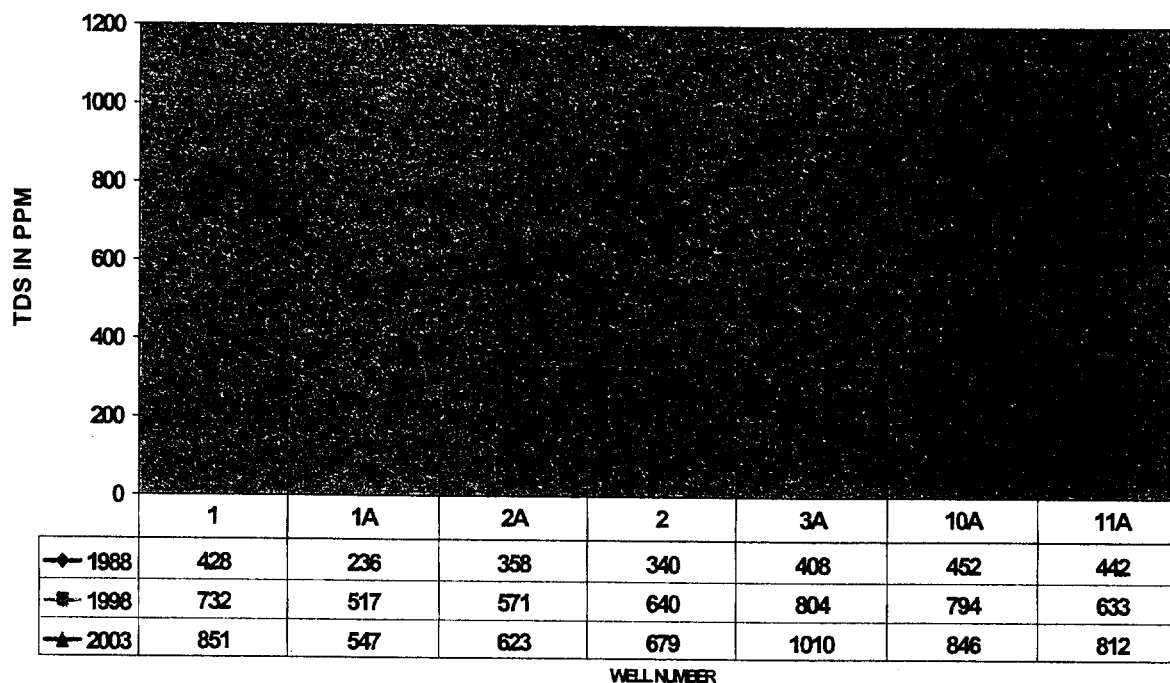
The Ramona Municipal Water District has a unique situation that may offer a new insight into the use of ground water total dissolved solids as the only means of measuring compliance with a groundwater basin objective. Ramona has been discussing a salt load reduction plan as an alternative to the traditional TDS approach. We have a unique opportunity because we can introduce a lower TDS water supply to reduce the total salts introduced into a basin. This approach is being considered by your staff and we hope will be presented at your April 14, 2004 Board meeting.

The points for considering a salt load reduction as an alternative for compliance to a Basin Plan objective are:

1. Development is approved by County Planning and then the District has no choice but to serve.
2. Development changes the groundwater conditions by adding more salts even with the Recycled Water Plant's Discharge TDS limits lower than the basin groundwater TDS.
3. Introduction of low TDS water as a mitigation measure has a greater impact on the groundwater salinity than controlling the TDS of the wastewater discharge.
4. Additional benefits of energy savings, lower costs, less traffic.



GOWER BASIN WELLS TOTAL DISSOLVED SOLIDS

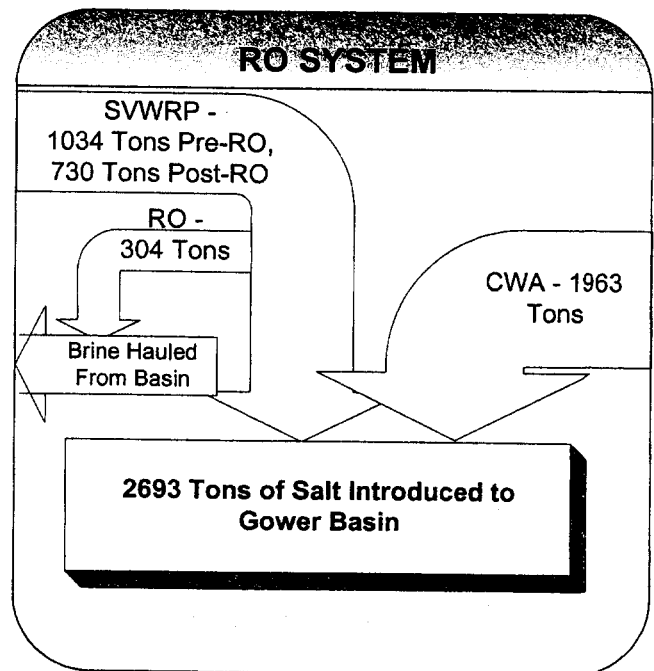
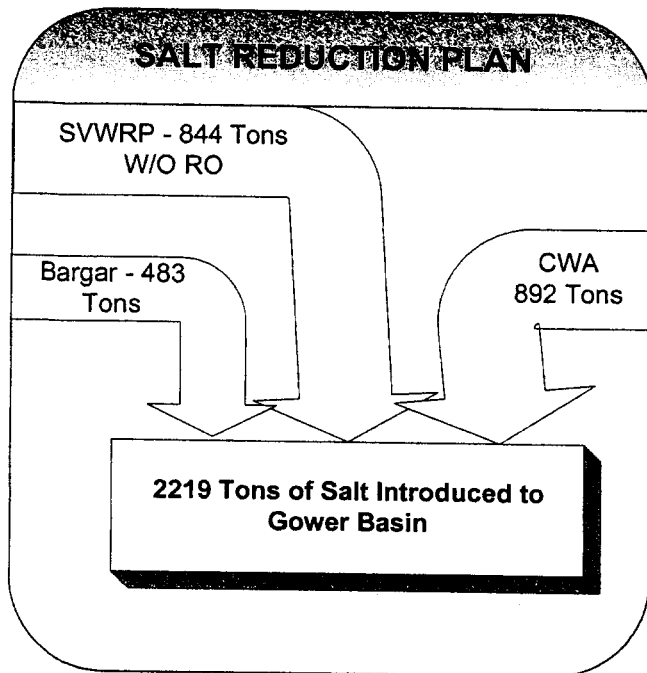


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GOWER HSA WATER SOURCES TDS

- SDCWA, 2750 AFY @ 525 mg/L
SVWRP, 896 AFY @ 600 mg/L
- Wells, 600 AFY @ 769 mg/L
- Occasional Bargar Water @ 237 mg/L

6



- Reduces salts introduced to basin by 474 tons compared to RO System
- Based on CWA TDS of 525ppm, Bargar TDS of 237ppm
- Based on demand in SDCE of 2750AFY (1250AFY CWA, 1500AFY Bargar)

Ultimate System Comparison at 800,000gpd (896AFY)

REDUCTION IN TONS OF SALT AT BUILDOUT 800,000GPD(896AFY)
 (Based on 1500AFY of Bargar Source water, RO based on 100% CWA Source water, and 325ppm is added to Source Water)

